

ABSTRACT

The present invention provides a high-strength thick steel plate having a plate thickness of 50 to 80 mm and a tensile strength of 490 to 570 MPa which is able to realize an excellent HAZ toughness even when welding with a heat input of 20 to 100 kJ/mm is conducted and is characterized by containing, by wt%, 0.03-0.14% of C, 0.30% or less of Si, 0.8-2.0% of Mn, 0.02% or less of P, 0.005% or less of S, 0.8-4.0% of Ni, 0.003-0.040% of Nb, 0.001-0.040% of Al, 0.0010-0.0100% of N, and 0.005-0.030% of Ti, where Ni and Mn satisfy equation [1], and the balance of iron and unavoidable impurities:

$$\text{Ni/Mn} \geq 10 \times \text{Ceq} - 3 \quad (0.36 < \text{Ceq} < 0.42) \quad [1]$$

$$\text{where, } \text{Ceq} = \text{C} + \text{Mn}/6 + (\text{Cr} + \text{Mo} + \text{V})/5 + (\text{Ni} + \text{Cu})/15$$